

REMARKS

Claims 1-10 are pending in this application. By this Amendment, claims 5-7 and 10 are amended. Reconsideration of the application is respectfully requested.

The courtesies extended to Applicants' representative by Examiner Mulpuri at the personal interview held November 8, 2005, are gratefully appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicant's record of the interview.

The Office Action indicates that "Applicant did not argue over applied art" (Office Action, page 2, line 3). Applicants respectfully disagree. Applicants' representative clearly argued over the applied art in the May 9, 2005 Amendment by referring to the Interview Summary conducted with Examiner Mulpuri on May 5, 2005.

The Office Action objects to claims 6-7 and 10 because of informalities. The claims are amended to overcome the informalities by replacing "etching preventing" by "etch preventing." Accordingly, withdrawal of the objection to the claims is respectfully requested.

The Office Action rejects claims 1, 3, 4, 6, 8 and 9 under 35 U.S.C. §102(b) over Kapon (EP 1,028,505); claims 6-10 under 35 U.S.C. §103(a) over Martinson et al. (IEEE Photonics Technology Letters 1999) in combination with Shieh et al. (U.S. Patent No. 5,293,392); and claims 2, 5, 7 and 10 under 35 U.S.C. §103(a) over Kapon in combination with Shieh. The rejections are respectfully traversed.

As agreed during the personal interview, none of the applied references, alone or in combination, disclose or suggest a method for manufacturing a surface emitting semiconductor laser that includes forming a boundary region for suppressing light emission of oscillation modes except for a plurality of specific oscillation modes, as recited in independent claim 1. Moreover, none of the applied references, alone or in combination, disclose or suggest a method for manufacturing a surface emitting semiconductor laser that

includes forming an upper reflection layer having a surface layer which forms a light emitting surface of a single light emitting region, as recited in independent claim 5. Finally, none of the applied references, alone or in combination, disclose or suggest a method for manufacturing a surface emitting semiconductor laser that includes forming an upper reflection layer having a surface layer which forms a light emitting surface of a light emitting region, wherein a media of the surface layer which forms the light emitting surface of the light emitting region has a different refractive index than a media of the surface layer of a neighboring light emitting region, as recited in independent claim 6.

Kapon teaches a vertical cavity surface emitting laser device that includes a plurality of VCSEL elements arranged on a common substrate (Abstract). Moreover, Kapon teaches that "the VCSEL device of the present invention allows... a high continuous output power exhibiting a single transverse radiation mode" (emphasis added), as indicated in Kapon in col. 3, lines 22-28. Accordingly, because Kapon teaches a single transverse radiation mode, Kapon then does not teach forming a boundary region for suppressing light emission of oscillation modes except for a plurality of specific oscillation modes. Accordingly, Kapon fails to disclose or suggest each and every feature of independent claim 1. As such, independent claim 1, and its dependent claims, are patentable over Kapon.

Moreover, Kapon teaches a plurality of VCSEL elements (Abstract). Accordingly, Kapon does not teach forming a single light emitting region, as recited in independent claim 5.

Finally, Kapon fails to disclose or suggest that the surface layers of neighboring divided regions, which the Office Action associates with the grid openings 6, have different refractive indices, as recited in independent claim 6. Support for this feature can be found in the specification at, for example, page 13, lines 25-27. Kapon teaches that the reflectivity in the areas of the grid layer 4 is lower than the reflectivity in the areas of the grid openings 6

(Section 0023), however, Kapon does not teach that the reflectivity between the areas corresponding to the different grid openings 6 is different. Accordingly, Kapon fails to disclose or suggest the features of independent claim 6. As such, independent claim 6, and its dependent claims, are patentable over Kapon.

For at least the reasons discussed above, independent claims 1, 5 and 6, and their dependent claims, are patentable over Kapon. Thus, withdrawal of the rejection of the claims under 35 U.S.C. §102(b) is respectfully requested.

Martinson teaches transverse mode selection in large area oxide-confined vertical cavity surface emitting laser by etching a shallow surface relief (Abstract).

Shieh teaches a top emitting vertical cavity surface emitting laser with an etch stop layer positioned in the top mirror stack so the stack can be etched to form a trench surrounding a mesa with the emitting area on the mesa and the trench confining current flow and lasing to the mesa (Abstract).

Accordingly, none of the applied references, alone or in combination, disclose or suggest a method of manufacturing a surface emitting semiconductor laser that includes forming a surface layer which forms a light emitting surface of a light emitting region, wherein a media of the surface layer which forms the light emitting surface of the light emitting region has a different refractive index than a media of the surface layer of a neighboring light emitting region, as recited in independent claim 6. Neither Martinson nor Shieh disclose or suggest any relationship between the refractive indices of light emitting regions. Accordingly, none of the applied references disclose, suggest or render obvious the features of independent claim 6. As such, independent claim 6, and its dependent claims, are patentable over Martinson and Shieh.

Finally, Shieh fails to cure deficiencies in Kapon in disclosing or rendering obvious the features of claims 2, 5, 7 and 10, including the limitations of independent claims 1 and 6.

For at least the reasons discussed above, none of the applied references, alone or in combination, disclose, suggest or render obvious the features of claims 2, 5 and 6-10. Accordingly, withdrawal of the rejections of the claims under 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-10 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Tarik M. Nabi
Registration No. 55,478

JAO:TMN/tje

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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